AN OUTBREAK OF PLESIOMONAS SHIGELLOIDES IN ZEBRAFISH

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Plesiomonas shigelloides is a flagellated, gram-negative rod that is an emergent pathogen associated with human gastroenteritis. Recently, we experienced a disease outbreak in zebrafish that were obtained from a commercial source. Fourteen days after being held at 27°C in our flow-through quarantine system, several zebrafish began to show clinical signs of disease including external lesions, impaired swimming and exopthalmia. Two days later, mortalities started to occur in this population. Moribund fish were sampled and fixed for histological observation. Concurrently, 2 moribund fish were euthanized and spleen and kidney preparations were spread on TSA and TSA blood agar plates and incubated at 27°C for 24 hours. Tissues from both fish yielded apparently pure cultures of a highly motile gram-negative rod, which formed white 0.25 mm colonies with lpha hemolytic activity on TSA blood agar. Sequence analysis on four representative strains demonstrated that the 16 S gene sequences for these isolates displayed 100% identity to *P. shigelloides*. Ten days after the initial onset of disease, mortality levels had reached 70% (63 of 90 fish) and the remaining fish were euthanized. Histological examination revealed moderate to severe areas of necrosis and inflammation in all major tissues with serial sections revealing the presence of numerous extracellular gram-negative bacilli as well as bacteria within tissue resident macrophages. Current research includes confirming Koch's postulates for the isolates, establishing antibiotic resistance profiles, bacterial whole-genome analysis and assessing the host pro-inflammatory (IL-1B, TNFA, IFNG and IL-8) response during infection.

Key Words: zebrafish, *Plesiomonas*, inflammation, disease, antibiotics

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